

FIG.1A

Amino Acid Sequence of the Composite HCV_{HC-J1/COC/CH1}

	5	10	16
1	Met Ser Thr Ile Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn		
17	Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly		
33	Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala		
49	Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro		
65	Ile Pro Lys Val Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly		
81	Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp		
97	Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro		
113	Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys		
129	Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu		
145	Gly Gly Ala Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp		
161	Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile		
177	Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Tyr		
193	Gln Val Arg Asn Ser Thr Gly Leu Tyr His Val Thr Asn Asp Cys Pro		
209	Asn Ser Ser Ile Val Tyr Glu Ala His Asp Ala Ile Leu His Thr Pro		
225	Gly Cys Val Pro Cys Val Arg Glu Gly Asn Val Ser Arg Cys Trp Val		
241	Ala Met Thr Pro Thr Val Ala Thr Arg Asp Gly Lys Leu Pro Ala Thr		
257	Gln Leu Arg Arg His Ile Asp Leu Leu Val Gly Ser Ala Thr Leu Cys		
273	Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Ser Val Phe Leu Ile Gly		
289	Gln Leu Phe Thr Phe Ser Pro Arg Arg His Trp Thr Thr Gln Gly Cys		
305	Asn Cys Ser Ile Tyr Pro Gly His Ile Thr Gly His Arg Met Ala Trp		
321	Asp Met Met Met Asn Trp Ser Pro Thr Ala Ala Leu Val Met Ala Gln		
337	Leu Leu Arg Ile Pro Gln Ala Ile Leu Asp Met Ile Ala Gly Ala His		
353	Trp Gly Val Leu Ala Gly Ile Ala Tyr Phe Ser Met Val Gly Asn Trp		
369	Ala Lys Val Leu Val Val Leu Leu Phe Ala Gly Val Asp Ala Glu		
385	Thr Ile Val Ser Gly Gly Gln Ala Ala Arg Ala Met Ser Gly Leu Val		
401	Ser Leu Phe Thr Pro Gly Ala Lys Gln Asn Ile Gln Leu Ile Asn Thr		
417	Asn Gly Ser Trp His Ile Asn Ser Thr Ala Leu Asn Cys Asn Glu Ser		
433	Leu Asn Thr Gly Trp Leu Ala Gly Leu Ile Tyr Gln His Lys Phe Asn		
449	Ser Ser Gly Cys Pro Glu Arg Leu Ala Ser Cys Arg Pro Leu Thr Asp		
465	Phe Asp Gln Gly Trp Gly Pro Ile Ser Tyr Ala Asn Gly Ser Gly Pro		
481	Asp Gln Arg Pro Tyr Cys Trp His Tyr Pro Pro Lys Pro Cys Gly Ile		
497	Val Pro Ala Lys Ser Val Cys Gly Pro Val Tyr Cys Phe Thr Pro Ser		
513	Pro Val Val Val Gly Thr Thr Asp Arg Ser Gly Ala Pro Thr Tyr Ser		
529	Trp Gly Glu Asn Asp Thr Asp Val Phe Val Leu Asn Asn Thr Arg Pro		
545	Pro Leu Gly Asn Trp Phe Gly Cys Thr Trp Met Asn Ser Thr Gly Phe		
561	Thr Lys Val Cys Gly Ala Pro Pro Cys Val Ile Gly Gly Ala Gly Asn		
577	Asn Thr Leu His Cys Pro Thr Asp Cys Phe Arg Lys His Pro Asp Ala		
593	Thr Tyr Ser Arg Cys Gly Ser Gly Pro Trp Ile Thr Pro Arg Cys Leu		
609	Val Asp Tyr Pro Tyr Arg Leu Trp His Tyr Pro Cys Thr Ile Asn Tyr		
625	Thr Ile Phe Lys Ile Arg Met Tyr Val Gly Gly Val Glu His Arg Leu		
641	Glu Ala Ala Cys Asn Trp Thr Arg Gly Glu Arg Cys Asp Leu Glu Asp		
657	Arg Asp Arg Ser Glu Leu Ser Pro Leu Leu Leu Thr Thr Gln Trp		
673	Gln Val Leu Pro Cys Ser Phe Thr Thr Leu Pro Ala Leu Ser Thr Gly		
689	Leu Ile His Leu His Gln Asn Ile Val Asp Val Gln Tyr Leu Tyr Gly		
705	Val Gly Ser Ser Ile Ala Ser Trp Ala Ile Lys Trp Glu Tyr Val Val		



FIG.1B

721 Leu Leu Phe Leu Leu Ala Asp Ala Arg Val Cys Ser Cys Leu Trp
737 Met Met Leu Leu Ile Ser Gln Ala Glu Ala Ala Leu Glu Asn Leu Val
753 Ile Leu Asn Ala Ala Ser Leu Ala Gly Thr His Gly Leu Val Ser Phe
769 Leu Val Phe Phe Cys Phe Ala Trp Tyr Leu Lys Gly Lys Trp Val Pro
785 Gly Ala Val Tyr Thr Phe Tyr Gly Met Trp Pro Leu Leu Leu Leu
801 Leu Ala Leu Pro Gln Arg Ala Tyr Ala Leu Asp Thr Glu Val Ala Ala
817 Ser Cys Gly Gly Val Val Leu Val Gly Leu Met Ala Leu Thr Leu Ser
833 Pro Tyr Tyr Lys Arg Tyr Ile Ser Trp Cys Leu Trp Trp Leu Gln Tyr
849 Phe Leu Thr Arg Val Glu Ala Gln Leu His Val Trp Ile Pro Pro Leu
865 Asn Val Arg Gly Gly Arg Asp Ala Val Ile Leu Leu Met Cys Ala Val
881 His Pro Thr Leu Val Phe Asp Ile Thr Lys Leu Leu Leu Ala Val Phe
897 Gly Pro Leu Trp Ile Leu Asp Ala Ser Leu Leu Lys Val Pro Tyr Phe
913 Val Arg Val Gln Gly Leu Leu Arg Phe Cys Ala Leu Ala Arg Lys Met
929 Ile Gly Gly His Tyr Val Gln Met Val Ile Ile Lys Leu Gly Ala Leu
945 Thr Gly Thr Tyr Val Tyr Asn His Leu Thr Pro Leu Arg Asp Trp Ala
961 His Asn Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Val Phe
977 Ser Gln Met Glu Thr Lys Leu Ile Thr Trp Gly Ala Asp Thr Ala Ala
993 Cys Gly Asp Ile Ile Asn Gly Leu Pro Val Ser Ala Arg Arg Gly Arg
1009 Glu Ile Leu Leu Gly Pro Ala Asp Gly Met Val Ser Lys Gly Trp Arg
1025 Leu Leu Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu
1041 Gly Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu
1057 Gly Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr
1073 Cys Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg
1089 Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val
1105 Asp Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ser Arg Ser Leu
1121 Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His
1137 Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu
1153 Leu Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro
1169 Leu Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val
1185 Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Asn
1201 Leu Glu Thr Thr Met Arg Ser Pro Val Phe Trp Asp Asn Ser Ser Pro
1217 Pro Val Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr
1233 Gly Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly
1249 Tyr Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe
1265 Gly Ala Tyr Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr
1281 Gly Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr
1297 Gly Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile
1313 Ile Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly
1329 Ile Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val
1345 Val Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro
1361 Asn Ile Glu Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr
1377 Gly Lys Ala Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile
1393 Phe Cys His Ser Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val
1409 Ala Leu Gly Ile Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser
1425 Val Ile Pro Thr Ser Gly Asp Val Val Val Ala Thr Asp Ala Leu



FIG.1C

1441 Met Thr Gly Tyr Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr
1457 Cys Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile
1473 Glu Thr Ile Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg
1489 Gly Arg Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro
1505 Gly Glu Arg Pro Ser Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys
1521 Tyr Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr
1537 Val Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln
1553 Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile
1569 Asp Ala His Phe Leu Ser Gln Thr Lys Gly Ser Gly Glu Asn Leu Pro
1585 Tyr Leu Val Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro
1601 Pro Pro Ser Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro
1617 Thr Leu His Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln
1633 Asn Glu Ile Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys
1649 Met Ser Ala Asp Leu Glu Val Val Thr Ser Thr Trp Val Leu Val Gly
1665 Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val
1681 Val Ile Val Gly Arg Val Val Leu Ser Gly Lys Pro Ala Ile Ile Pro
1697 Asp Arg Glu Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu Cys Ser
1713 Gln His Leu Pro Tyr Ile Glu Gln Gly Met Met Leu Ala Glu Gln Phe
1729 Lys Gln Lys Ala Leu Gly Leu Leu Gln Thr Ala Ser Arg Gln Ala Glu
1745 Val Ile Ala Pro Ala Val Gln Thr Asn Trp Gln Lys Leu Glu Thr Phe
1761 Trp Ala Lys His Met Trp Asn Phe Ile Ser Gly Ile Gln Tyr Leu Ala
1777 Gly Leu Ser Thr Leu Pro Gly Asn Pro Ala Ile Ala Ser Leu Met Ala
1793 Phe Thr Ala Ala Val Thr Ser Pro Leu Thr Thr Ser Gln Thr Leu Leu
1809 Phe Asn Ile Leu Gly Gly Trp Val Ala Ala Gln Leu Ala Ala Pro Gly
1825 Ala Ala Thr Ala Phe Val Gly Ala Gly Leu Ala Gly Ala Ala Ile Gly
1841 Ser Val Gly Leu Gly Lys Val Leu Ile Asp Ile Leu Ala Gly Tyr Gly
1857 Ala Gly Val Ala Gly Ala Leu Val Ala Phe Lys Ile Met Ser Gly Glu
1873 Val Pro Ser Thr Glu Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser
1889 Pro Gly Ala Leu Val Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg
1905 His Val Gly Pro Gly Glu Gly Ala Val Gln Trp Met Asn Arg Leu Ile
1921 Ala Phe Ala Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro
1937 Glu Ser Asp Ala Ala Ala Arg Val Thr Ala Ile Leu Ser Ser Leu Thr
1953 Val Thr Gln Leu Leu Arg Arg Leu His Gln Trp Ile Ser Ser Glu Cys
1969 Thr Thr Pro Cys Ser Gly Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile
1985 Cys Glu Val Leu Ser Asp Phe Lys Thr Trp Leu Lys Ala Lys Leu Met
2001 Pro Gln Leu Pro Gly Ile Pro Phe Val Ser Cys Gln Arg Gly Tyr Lys
2017 Gly Val Trp Arg Val Asp Gly Ile Met His Thr Arg Cys His Cys Gly
2033 Ala Glu Ile Thr Gly His Val Lys Asn Gly Thr Met Arg Ile Val Gly
2049 Pro Arg Thr Cys Arg Asn Met Trp Ser Gly Thr Phe Pro Ile Asn Ala
2065 Tyr Thr Thr Gly Pro Cys Thr Arg Leu Pro Ala Pro Asn Tyr Thr Phe
2081 Ala Leu Trp Arg Val Ser Ala Glu Glu Tyr Val Glu Ile Arg Gln Val
2097 Gly Asp Phe His Tyr Val Thr Gly Met Thr Thr Asp Asn Leu Lys Cys
2113 Pro Cys Gln Val Pro Ser Pro Glu Phe Phe Thr Glu Leu Asp Gly Val
2129 Arg Leu His Arg Phe Ala Pro Pro Cys Lys Pro Leu Leu Arg Glu Glu
2145 Val Ser Phe Arg Val Gly Leu His Glu Tyr Pro Val Gly Ser Gln Leu



FIG.1D

2161 Pro Cys Glu Pro Glu Pro Asp Val Ala Val Leu Thr Ser Met Leu Thr
2177 Asp Pro Ser His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu Ala Arg
2193 Gly Ser Pro Pro Ser Val Ala Ser Ser Ser Ala Ser Gln Leu Ser Ala
2209 Pro Ser Leu Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro Asp Ala
2225 Glu Leu Ile Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn
2241 Ile Thr Arg Val Glu Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe
2257 Asp Pro Leu Val Ala Glu Glu Asp Glu Arg Glu Ile Ser Val Pro Ala
2273 Glu Ile Leu Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp
2289 Ala Arg Pro Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro
2305 Asp Tyr Glu Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Pro Lys
2321 Ser Pro Pro Val Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr
2337 Glu Ser Thr Leu Ser Thr Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe
2353 Gly Ser Ser Ser Thr Ser Gly Ile Thr Gly Asp Asn Thr Thr Ser
2369 Ser Glu Pro Ala Pro Ser Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser
2385 Tyr Ser Ser Met Pro Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu
2401 Ser Asp Gly Ser Trp Ser Thr Val Ser Ser Glu Ala Asn Ala Glu Asp
2417 Val Val Cys Cys Ser Met Ser Tyr Ser Trp Thr Gly Ala Cys Val Thr
2433 Pro Cys Ala Ala Glu Glu Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn
2449 Ser Leu Leu Arg His His Asn Leu Val Tyr Ser Thr Thr Ser Arg Ser
2465 Ala Cys Gln Arg Gln Lys Lys Val Thr Phe Asp Arg Leu Gln Val Leu
2481 Asp Ser His Tyr Gln Asp Val Leu Lys Glu Val Lys Ala Ala Ala Ser
2497 Lys Val Lys Ala Asn Leu Leu Ser Val Glu Glu Ala Cys Ser Leu Thr
2513 Pro Pro His Ser Ala Lys Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val
2529 Arg Cys His Ala Arg Lys Ala Val Thr His Ile Asn Ser Val Trp Lys
2545 Asp Leu Leu Glu Asp Asn Val Thr Pro Ile Asp Thr Thr Ile Met Ala
2561 Lys Asn Glu Val Phe Cys Val Gln Pro Glu Lys Gly Arg Lys Pro
2577 Ala Arg Leu Ile Val Phe Pro Asp Leu Gly Val Arg Val Cys Glu Lys
2593 Met Ala Leu Tyr Asp Val Val Thr Lys Leu Pro Leu Ala Val Met Gly
2609 Ser Ser Tyr Gly Phe Gln Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu
2625 Val Gln Ala Trp Lys Ser Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp
2641 Thr Arg Cys Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu
2657 Glu Ala Ile Tyr Gln Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala
2673 Ile Lys Ser Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn
2689 Ser Arg Gly Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val
2705 Leu Thr Thr Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg
2721 Ala Ala Cys Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys
2737 Gly Asp Asp Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp
2753 Ala Ala Ser Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala
2769 Pro Pro Gly Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr
2785 Ser Cys Ser Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg
2801 Val Tyr Tyr Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala
2817 Trp Glu Thr Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile
2833 Ile Met Phe Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His
2849 Phe Phe Ser Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp
2865 Cys Glu Ile Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro
2881 Pro Ile Ile Gln Arg Leu Gly Cys Pro Glu Arg Leu Ala Ser



Antibody binding to individual peptides and various mixtures in an ELISA assay

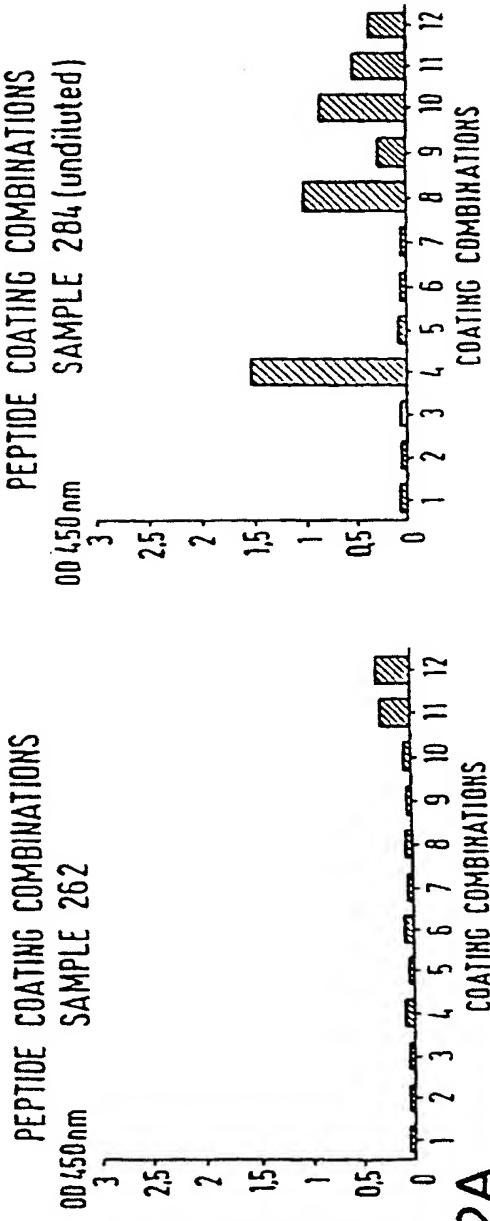
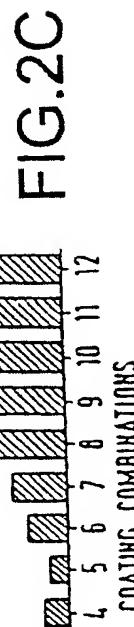
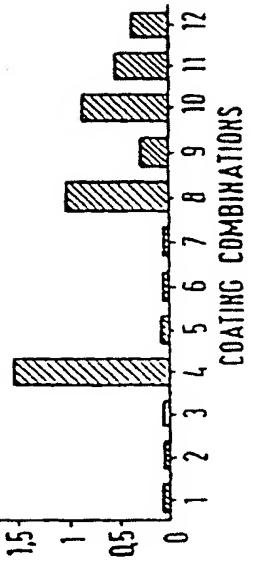


FIG.2A



FIG.2B



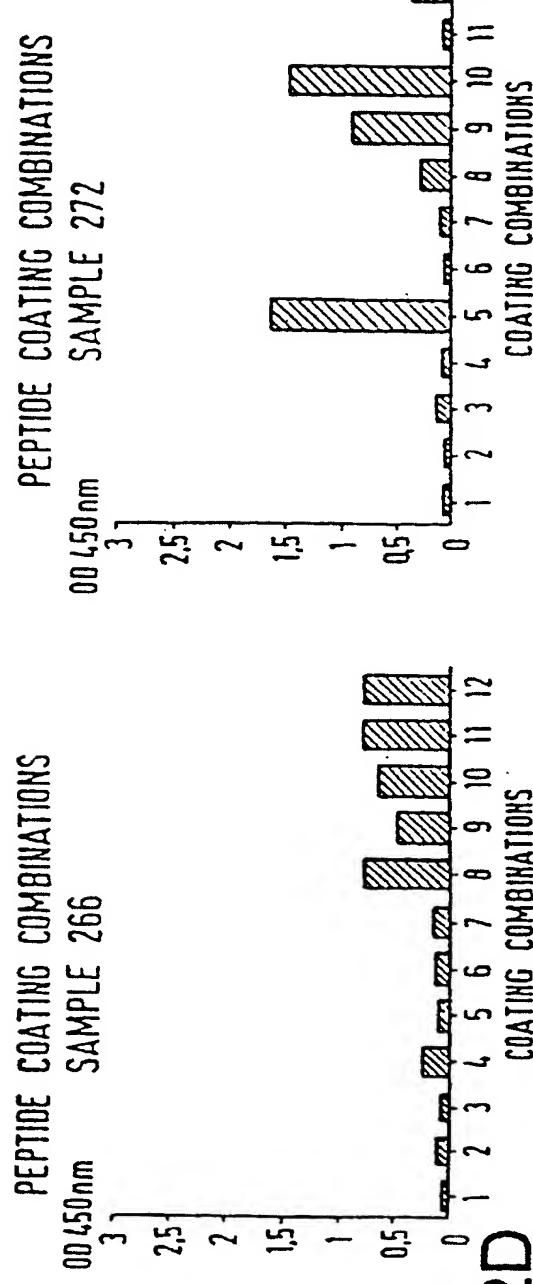


FIG.2D



FIG.2E

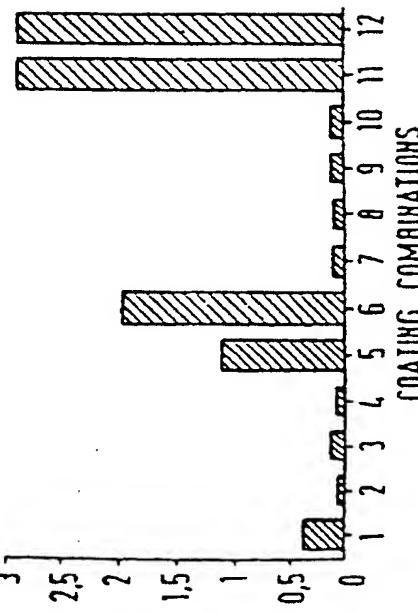


FIG.2F

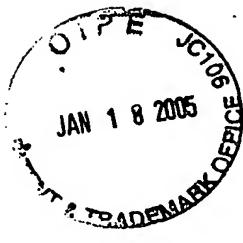


FIG.2G

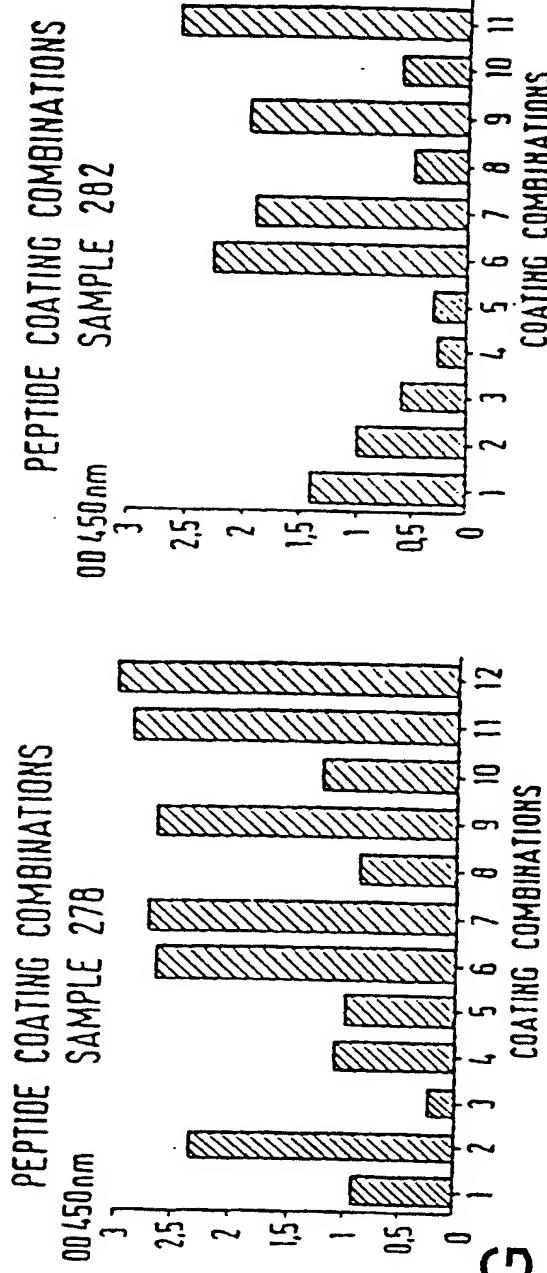
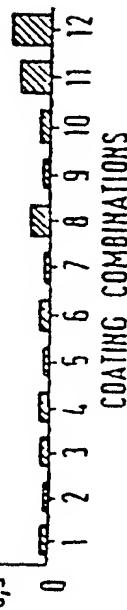


FIG.2H



FIG.2I



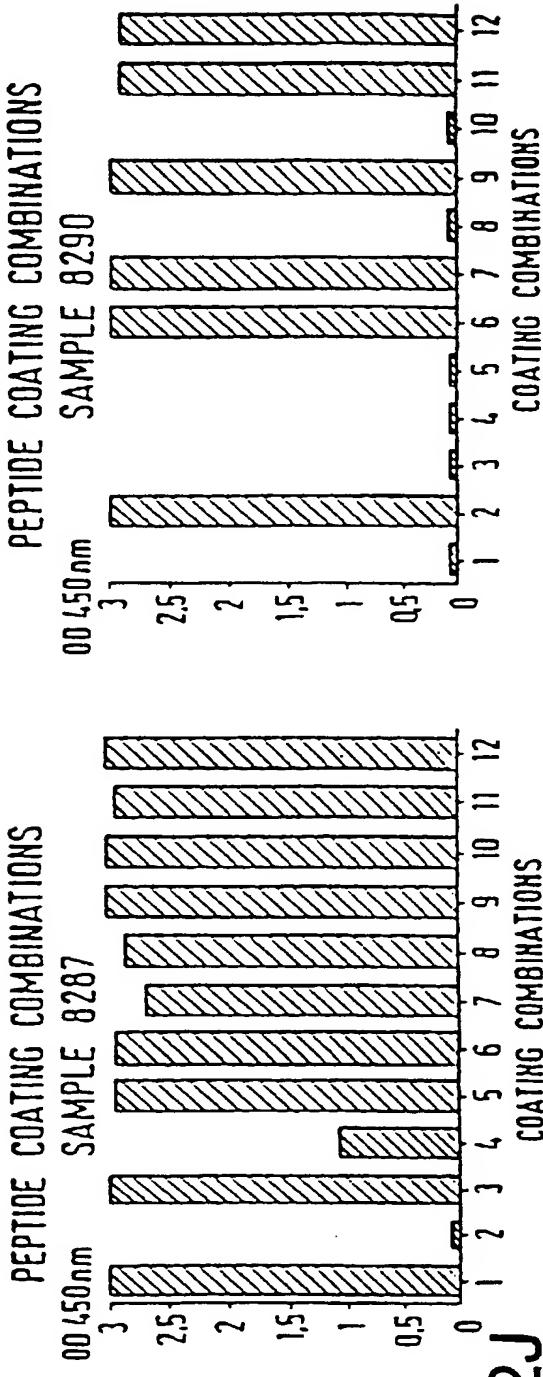


FIG.2J



FIG.2K

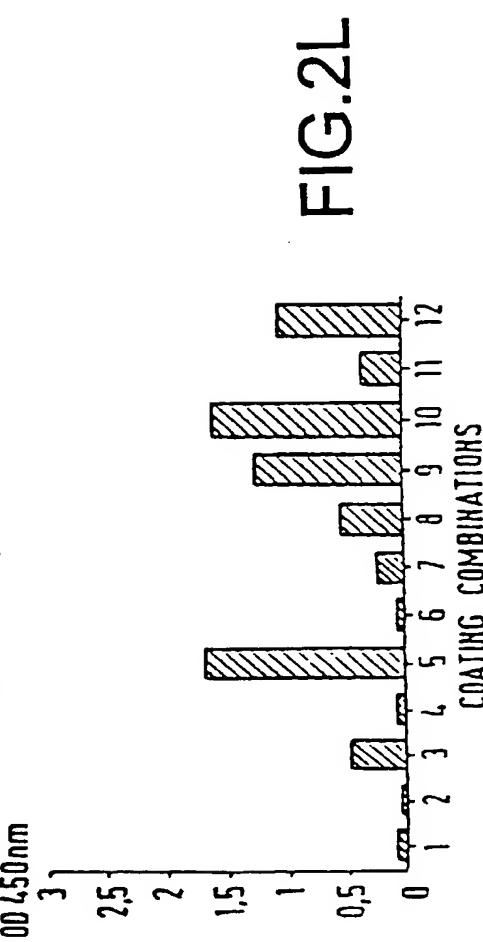


FIG.2L